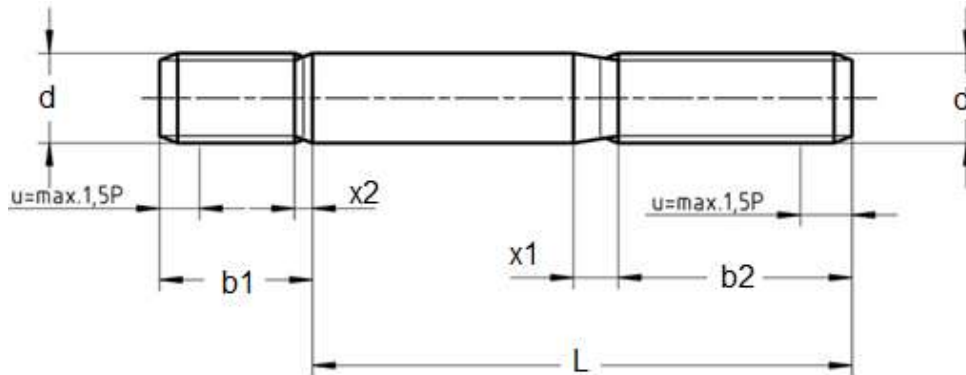


## Metric DIN 938 Double End Studs (1xD)

Visit our [online store](#) for product availability



**Dimensions of Metric DIN 938 Double End Studs**

| DIAMETER (d) | PITCH | b1 | (b2) L < 125 | (b2) L = 125- 200 | (b2) L ≥ 200 | X1   | X2  |
|--------------|-------|----|--------------|-------------------|--------------|------|-----|
| M8           | 1.25  | 8  | 22           | 28                | –            | 3.2  | 1.6 |
| M10          | 1.5   | 10 | 26           | 32                | 45           | 3.8  | 1.9 |
| M12          | 1.75  | 12 | 30           | 36                | 49           | 4.3  | 2.2 |
| M14          | 2     | 14 | 34           | 40                | 53           | 5    | 2.5 |
| M16          | 2     | 16 | 38           | 44                | 57           | 5    | 2.5 |
| M18          | 2.5   | 18 | 42           | 48                | 61           | 6.3  | 3.2 |
| M20          | 2.5   | 20 | 46           | 52                | 65           | 6.3  | 3.2 |
| M22          | 2.5   | 22 | 50           | 56                | 69           | 6.3  | 3.2 |
| M24          | 3     | 24 | 54           | 60                | 73           | 7.5  | 3.8 |
| M27          | 3     | 27 | 60           | 66                | 79           | 7.5  | 3.8 |
| M30          | 3.5   | 30 | 66           | 72                | 85           | 9    | 4.5 |
| M33          | 3.5   | 33 | 72           | 78                | 91           | 9    | 4.5 |
| M36          | 4     | 36 | 78           | 84                | 97           | 10   | 5   |
| M39          | 4     | 39 | 84           | 90                | 103          | 10   | 5   |
| M42          | 4.5   | 42 | 90           | 96                | 109          | 11   | 5.5 |
| M45          | 4.5   | 45 | 96           | 102               | 115          | 11   | 5.5 |
| M48          | 5     | 48 | 102          | 108               | 121          | 12.5 | 6.3 |
| M52          | 5     | 52 | 110          | 116               | 129          | 12.5 | 6.3 |

Aspen Fasteners 4807 Rockside Road, Suite 400, Independence, OH 44131 USA  
[www.aspenfasteners.com](http://www.aspenfasteners.com) | [aspensales@aspenfasteners.com](mailto:aspensales@aspenfasteners.com) | 1-800-479-0056

Headquarters: Independence OH USA; Montreal QC Canada;

Distribution Centers: Boston MA; Chicago IL; Cincinnati KY; Dallas TX; Denver CO; Houston TX; Jersey City NJ; Los Angeles CA; Miami FL; San Francisco CA; Seattle WA; Washington VA; Toronto ON; Calgary AB; Vancouver BC; Jiutepec (Temixco); Mexico City; Monterrey



Metric DIN 938 double end studs are machine thread fasteners without a head and may or may not be fully threaded depending on the length of the fastener. Depending on the application, both ends can accept a nut or one end may be threaded into a pre-tapped hole, leaving the other end available for attaching a mated component secured with a nut. Studs assemblies offer several advantages over bolts: They eliminate the need for perfect squareness in an assembly allowing a nut to "float" and adjust on the nut end threads. Furthermore studs can act as pilots to ease the assembly and disassembly of mated parts.

When ordering DIN 938 double end studs, the correct dimension is diameter x nominal length (excluding the tap end  $b_1$ ). For example, with a stud measuring M10X50 (the diameter( $d$ ) = 10mm and nominal length( $l$ ) = 50 mm where the thread length on the metal end (tap end)  $b_1$  = 10 mm; the overall length of the stud is 50 + 10 = 60 mm. The thread length on the nut end  $b_2$  varies depending on the length of the stud as illustrated in the table above.

**Note: Studs whose length (L) is less than or equal to 2 times their nominal diameter + 6mm, will normally be fully threaded.**

Aspen Fasteners offers one of the most complete ranges of metric studs and other inch and metric industrial fasteners for immediate delivery from stock. The following sizes of metric DIN 938 double end studs are available for immediate shipping from stock: Diameters ranging from M5 to M30 and lengths to 120mm in A2 and marine grade A4 stainless steel. View parts by clicking on the following link: [DIN 938 double end studs](#)

DIN (Deutsches Institut für Normung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 938 double end studs. The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization.

### 1) Mechanical properties of stainless steel for metric DIN 938 Double End Studs

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.

| Steel group | Steel grade | Strength class | Screws, Nuts and Bolts             |                      |           |                            |
|-------------|-------------|----------------|------------------------------------|----------------------|-----------|----------------------------|
|             |             |                | Tensile strength N/mm <sup>2</sup> | Tensile strength PSI | Dia range | Nut Load N/mm <sup>2</sup> |
| Austenitic  | A2 and A4   | 50             | 500                                | 70,000               | <=M39     | 500                        |
|             |             | 70             | 700                                | 100,000              | <=M20     | 700                        |
|             |             | 80             | 800                                | 118,000              | <=M20     | 800                        |

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless steel screws

Aspen Fasteners 4807 Rockside Road, Suite 400, Independence, OH 44131 USA  
[www.aspenfasteners.com](http://www.aspenfasteners.com) | [aspensales@aspenfasteners.com](mailto:aspensales@aspenfasteners.com) | 1-800-479-0056

Headquarters: Independence OH USA; Montreal QC Canada;  
 Distribution Centers: Boston MA; Chicago IL; Cincinnati KY; Dallas TX; Denver CO; Houston TX; Jersey City NJ; Los Angeles CA; Miami FL;  
 San Francisco CA; Seattle WA; Washington VA; Toronto ON; Calgary AB; Vancouver BC; Jiutepec (Temixco); Mexico City; Monterrey



| Steel group | Property Strength class | Made From | Characteristics  |
|-------------|-------------------------|-----------|--|
| Austenitic  | 50                      | A1, A2    | Soft; cold worked, turned and soft pressed fasteners     |
|             | 70                      | A2, A4    | Cold worked, normal strength formed fasteners            |
|             | 80                      | A2, A4    | Extreme cold worked, high strength, special applications |

**2) Chemical composition of stainless steel metric DIN 938 Double End Studs**

| Grade      | USA Grade  | Material designation | Material no. | C %    | Si ≤ % | Mn ≤ % | Cr %         | Mo %       | Ni %         |
|------------|------------|----------------------|--------------|--------|--------|--------|--------------|------------|--------------|
| <b>A 2</b> | <b>304</b> | X 5Cr Ni 1810        | 1.4301       | ≤ 0.07 | 1.0    | 2.0    | 17.5 to 19.5 | -          | 8.0 to 10.5  |
|            |            | X 2 Cr Ni 1811       | 1.4306       | ≤ 0.03 | 1.0    | 2.0    | 18.0 to 20.0 | -          | 10 to 12.0   |
|            |            | X 8 Cr Ni 19/10      | 1.4303       | ≤ 0.07 | 1.0    | 2.0    | 17.0 to 19.0 | -          | 11.0 to 13.0 |
| <b>A 4</b> | <b>316</b> | X 5 Cr Ni Mo 1712    | 1.4401       | ≤ 0.07 | 1.0    | 2.0    | 16.5 to 18.5 | 2.0 to 2.5 | 10.0 to 13.0 |
|            |            | X 2 Cr Ni Mo 1712    | 1.4404       | ≤ 0.03 | 1.0    | 2.0    | 16.5 to 18.5 | 2.0 to 2.5 | 10 to 13     |

Aspen Fasteners 4807 Rockside Road, Suite 400, Independence, OH 44131 USA  
[www.aspenfasteners.com](http://www.aspenfasteners.com) | [aspensales@aspenfasteners.com](mailto:aspensales@aspenfasteners.com) | 1-800-479-0056

Headquarters: Independence OH USA; Montreal QC Canada;  
 Distribution Centers: Boston MA; Chicago IL; Cincinnati KY; Dallas TX; Denver CO; Houston TX; Jersey City NJ; Los Angeles CA; Miami FL;  
 San Francisco CA; Seattle WA; Washington VA; Toronto ON; Calgary AB; Vancouver BC; Jiutepec (Temixco); Mexico City; Monterrey



### 3) Chemical composition of steel metric DIN 938 Double End Studs

| PROPERTY CLASS     | MATERIAL AND TREATMENT   | CHEMICAL COMPOSITION LIMITS % |      |       |       | TEMPERING TEMP °C MIN. |
|--------------------|--|-------------------------------|------|-------|-------|------------------------|
|                    |  | C                             |      | P     | S     |                        |
|                    |  | min.                          | max. | max.  | max.  |                        |
| 4.6, 4.8, 5.8, 6.8 | Low or medium carbon steel   | -                             | 0.55 | 0.05  | 0.06  | -                      |
| 8.8                | Medium carbon steel quenched, tempered   | 0.25                          | 0.55 | 0.04  | 0.05  | 425                    |
| 9.8                | Medium carbon steel quenched, tempered   | 0.25                          | 0.55 | 0.04  | 0.05  | 425                    |
| 10.9               | Medium carbon steel additives e.g. boron, Mn, Cr or Alloy steel - quenched, tempered | 0.20                          | 0.55 | 0.04  | 0.05  | 425                    |
| 12.9               | Alloy steel - quenched, tempered   | 0.20                          | 0.50 | 0.035 | 0.035 | 380                    |

### 4) Mechanical properties of steel for metric DIN 938 Double End Studs

| MECHANICAL PROPERTY                             |          | PROPERTY CLASS |     |     |     |           |          |     |      |      |
|---|----------|----------------|-----|-----|-----|-----------|----------|-----|------|------|
|   |          | 4.8            | 5.6 | 5.8 | 6.8 | 8.8       |          | 9.8 | 10.9 | 12.9 |
|   |          |                |     |     |     | Up to M16 | Over M16 |     |      |      |
| Tensile Strength (Rm, N/mm <sup>2</sup> )       | nom.     | 400            | 500 |     | 600 | 800       |          | 900 | 1000 | 1200 |
|   | min.     | 420            | 500 | 520 | 600 | 800       | 830      | 900 | 1040 | 1220 |
| Vickers Hardness                                | min.     | 130            | 155 | 160 | 190 | 250       | 255      | 290 | 320  | 385  |
|   | max.     | 250            |     |     |     | 320       | 336      | 360 | 380  | 435  |
| Brinell Hardness                                | min.     | 124            | 147 | 152 | 181 | 319       | 242      | 266 | 295  | 353  |
|   | max.     | 238            |     |     |     | 385       | 319      | 342 | 363  | 412  |
| Rockwell Hardness                               | min. HR  | 71             | 79  | 82  | 89  | -         |          |     |      |      |
|   | HRC      | -              | -   | -   | -   | 20        | 23       | 28  | 32   | 39   |
|   | HR       | 95             |     |     |     | 99        | -        |     |      |      |
|   | max. HRC | -              | -   | -   | -   | 32        | 34       | 37  | 39   | 44   |
| Yield Stress ReL. N/mm <sup>2</sup>             | nom.     | 320            | 300 | 400 | 480 | -         |          |     |      |      |
|   | min.     | 340            | 300 | 420 | 480 | -         |          |     |      |      |
| Stress at permanent set limit N/mm <sup>2</sup> | nom.     | -              |     |     |     | 640       |          | 720 | 900  | 1080 |
|   | min.     | -              |     |     |     | 640       | 660      | 720 | 940  | 1100 |

#### Disclaimer

Dimensional data and technical information for Metric DIN 938 double end studs was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change without notice. Aspen Fasteners makes no warranties or representations regarding the accuracy and validity of the compiled information and data. Contact the relevant standards authorities for accurate and detailed information.

Aspen Fasteners 4807 Rockside Road, Suite 400, Independence, OH 44131 USA  
[www.aspenfasteners.com](http://www.aspenfasteners.com) | [aspensales@aspenfasteners.com](mailto:aspensales@aspenfasteners.com) | 1-800-479-0056

Headquarters: Independence OH USA; Montreal QC Canada;  
 Distribution Centers: Boston MA; Chicago IL; Cincinnati KY; Dallas TX; Denver CO; Houston TX; Jersey City NJ; Los Angeles CA; Miami FL;  
 San Francisco CA; Seattle WA; Washington VA; Toronto ON; Calgary AB; Vancouver BC; Jiutepec (Temixco); Mexico City; Monterrey